MARKED-UP VERSION OF AMENDED CLAIMS

1. (Amended) A heat exchanger comprising:

a plurality of fins spaced from each other in parallel and allowing an air flow to pass through a gap therebetween;

a plurality of heat transfer tubes extending through the fins; and

a plurality of vortex generators respectively formed on the plurality of fins and corresponding to each of the plurality of heat transfer tubes, each of the vortex generators comprising a plurality of protuberance ribs formed on [the] a corresponding fin [and centralized with the] around a respective centrally disposed heat transfer tube, each of the protuberance ribs having an arcuate contour in a plane normal to the respective heat transfer tube, the plurality of arcuate protuberance ribs together forming a circular pattern concentrically spaced from the respective heat transfer tube, an air flow inlet being defined between an adjacent two of the protuberance ribs and an air flow outlet being defined between another adjacent two of the protuberance ribs;

wherein the air flow is guided from the air flow inlet, through channels defined between the vortex generator and the heat transfer tube, and passes out of the air flow outlet, thereby speeding the air flow, and generating vortexes at the protuberance ribs and the air flow outlet for [draining] drawing outer air to the heat exchanger for air mixing.

11. (Amended) A [The] heat exchanger, comprising: [as claimed in claim 1, wherein]

a plurality of fins spaced from each other in parallel and allowing an air flow to pass through a gap therebetween;

a plurality of heat transfer tubes extending through the fins; and

a plurality of vortex generators respectively formed on the plurality of fins and corresponding to each of the plurality of heat transfer tubes, each of the vortex generators comprising a plurality of protuberance ribs formed on a corresponding fin around a respective centrally disposed heat transfer tube, an air flow inlet being defined between an adjacent two of the protuberance ribs and an air flow outlet being defined between another adjacent two of the protuberance ribs, each protuberance rib [has] having a vertical wall connected to a sloped wall and the vertical wall [is] being located between [the] a respective heat transfer tube and the sloped wall;

wherein the air flow is guided from the air flow inlet, through channels defined between the plurality of protuberance ribs and the heat transfer tube, and passes out of the air flow outlet, thereby speeding the air flow, and generating vortexes at the protuberance ribs and the air flow outlet for drawing outer air to the heat exchanger for air mixing.

12. (Amended) A [The] heat exchanger, comprising: [as claimed in claim 1, wherein]

a plurality of fins spaced from each other in parallel and allowing an air flow to pass through a gap therebetween;

a plurality of heat transfer tubes extending through the fins; and

a plurality of vortex generators respectively formed on the plurality of fins and corresponding to each of the plurality of heat transfer tubes, each of the vortex generators comprising a plurality of protuberance ribs formed on a corresponding fin around a respective centrally disposed heat transfer tube, an air flow inlet being defined between an adjacent two of the protuberance ribs and an air flow outlet being defined between another adjacent two of the protuberance ribs, each protuberance rib [has] having a vertical wall connected to a sloped wall and the sloped wall [is] being located between [the] a respective heat transfer tube and the vertical wall;

wherein the air flow is guided from the air flow inlet, through channels defined between the plurality of protuberance ribs and the heat transfer tube, and passes out of the air flow outlet, thereby speeding the air flow, and generating vortexes at the protuberance ribs and the air flow outlet for drawing outer air to the heat exchanger for air mixing.

13. (Amended) A heat exchanger comprising:

a plurality of fins spaced from each other in parallel and allowing an air flow to pass through a gap therebetween;

a plurality of heat transfer tubes extending through the fins; and

a plurality of vortex generators respectively formed on the plurality of fins and corresponding to each of the plurality of heat transfer tubes, each of the vortex generators comprising (a) a plurality of inner protuberance ribs formed on [the] a corresponding fin [and centralized with the] around a respective centrally disposed heat transfer tube, each of the inner protuberance ribs extending from a first surface of the corresponding fin in a first direction and having an arcuate contour in a plane normal to the respective heat transfer tube, the plurality of arcuate inner protuberance ribs together forming a circular pattern concentrically spaced from the respective heat transfer tube, a [an] first air flow inlet being defined between an adjacent two of the inner protuberance ribs and [an] a first air flow outlet being defined between another adjacent two of the inner protuberance ribs; and (b) a plurality of outer protuberance ribs formed on the corresponding fin [and centralized with] around the centrally disposed heat transfer tube and [respectively corresponding to] in respective radial alignment with the inner protuberance ribs, each of the outer protuberance ribs extending from a second surface of the corresponding fin in a second direction, the second direction being opposite the first direction, each of the outer protuberance ribs having an arcuate contour in a plane normal to the respective heat transfer

tube, the plurality of arcuate outer protuberance ribs together forming a circular pattern concentrically spaced from the circular pattern of the inner protuberance ribs, a [an] second air flow inlet being defined between an adjacent two of the outer protuberance ribs and [an] a second air flow outlet being defined between another adjacent two of the outer protuberance ribs;

wherein the air flow is respectively guided from the first and second air flow inlets, through channels defined between the [vortex generator] inner and outer protuberance ribs and between the inner protuberance ribs and the heat transfer tube, and respectively pass [passes] out of the first and second air flow outlets, thereby speeding the air flow and [draining] drawing wake lagged air in the first and second air flow outlets away from the first and second air flow outlet, and generating vortexes at the inner and outer protuberance ribs and the first and second air flow outlets for [draining] drawing outer air to the heat exchanger for air mixing.

21. (Amended) A [The] heat exchanger, comprising: [as claimed in claim 13, wherein]

a plurality of fins spaced from each other in parallel and allowing an air flow to pass through a gap therebetween;

a plurality of heat transfer tubes extending through the fins; and

a plurality of vortex generators respectively formed on the plurality of fins and corresponding to each of the plurality of heat transfer tubes, each of the vortex generators comprising (a) a plurality of inner protuberance ribs formed on a corresponding fin around a respective centrally disposed heat transfer tube, a first air flow inlet being defined between an adjacent two of the inner protuberance ribs and a first air flow outlet being defined between another adjacent two of the inner protuberance ribs; and (b) a plurality of outer protuberance ribs formed on the corresponding fin around the centrally disposed heat transfer tube and in respective radial alignment with the inner protuberance ribs, a second air flow inlet being defined between an adjacent two of the outer protuberance ribs and a second air flow outlet being defined between another adjacent two of the outer protuberance ribs, each of the inner and outer protuberance ribs [has] having a vertical wall connected to a curved wall;

wherein the air flow is guided from the second and first air flow inlets, through channels defined between the inner and outer protuberance ribs and between the inner protuberance ribs and the heat transfer tube, and passes out of the first and second air flow outlets, thereby speeding the air flow and drawing wake lagged air in the first and second air flow outlets away from the first and second air flow outlet, and generating vortexes at the inner and outer protuberance ribs and the first and second air flow outlets for drawing outer air to the heat exchanger for air mixing.

23. (Amended) A [The] heat exchanger, comprising: [as claimed in claim 13, wherein]

a plurality of fins spaced from each other in parallel and allowing an air flow to pass through a gap therebetween;

a plurality of heat transfer tubes extending through the fins; and

a plurality of vortex generators respectively formed on the plurality of fins and corresponding to each of the plurality of heat transfer tubes, each of the vortex generators comprising (a) a plurality of inner protuberance ribs formed on a corresponding fin around a respective centrally disposed heat transfer tube, a first air flow inlet being defined between an adjacent two of the inner protuberance ribs and a first air flow outlet being defined between another adjacent two of the inner protuberance ribs; and (b) a plurality of outer protuberance ribs formed on the corresponding fin around the centrally disposed heat transfer tube and in respective radial alignment with the inner protuberance ribs, a second air flow inlet being defined between an adjacent two of the outer protuberance ribs and a second air flow outlet being defined between another adjacent two of the outer protuberance ribs, each of the inner and outer protuberance ribs [has] having a vertical wall connected to a sloped wall and the vertical wall [is] being located between the heat transfer tube and the sloped wall;

wherein the air flow is guided from the second and first air flow inlets, through channels defined between the inner and outer protuberance ribs and between the

inner protuberance ribs and the heat transfer tube, and passes out of the first and second air flow outlets, thereby speeding the air flow and drawing wake lagged air in the first and second air flow outlets away from the first and second air flow outlet, and generating vortexes at the inner and outer protuberance ribs and the first and second air flow outlets for drawing outer air to the heat exchanger for air mixing.

24. (Amended) A [The] heat exchanger, comprising: [as claimed in claim 13, wherein]

a plurality of fins spaced from each other in parallel and allowing an air flow to pass through a gap therebetween;

a plurality of heat transfer tubes extending through the fins; and

a plurality of vortex generators respectively formed on the plurality of fins and corresponding to each of the plurality of heat transfer tubes, each of the vortex generators comprising (a) a plurality of inner protuberance ribs formed on a corresponding fin around a respective centrally disposed heat transfer tube, a first air flow inlet being defined between an adjacent two of the inner protuberance ribs and a first air flow outlet being defined between another adjacent two of the inner protuberance ribs; and (b) a plurality of outer protuberance ribs formed on the corresponding fin around the centrally disposed heat transfer tube and in respective radial alignment with the inner protuberance ribs, a second air flow inlet being defined between an adjacent two of the outer protuberance

ribs and a second air flow outlet being defined between another adjacent two of the outer protuberance ribs, each of the inner and outer protuberance ribs [has] having a vertical wall connected to a sloped wall and the sloped wall [is] being located between the heat transfer tube and the vertical wall;

wherein the air flow is guided from the second and first air flow inlets, through channels defined between the inner and outer protuberance ribs and between the inner protuberance ribs and the heat transfer tube, and passes out of the first and second air flow outlets, thereby speeding the air flow and drawing wake lagged air in the first and second air flow outlets away from the first and second air flow outlet, and generating vortexes at the inner and outer protuberance ribs and the first and second air flow outlets for drawing outer air to the heat exchanger for air mixing.